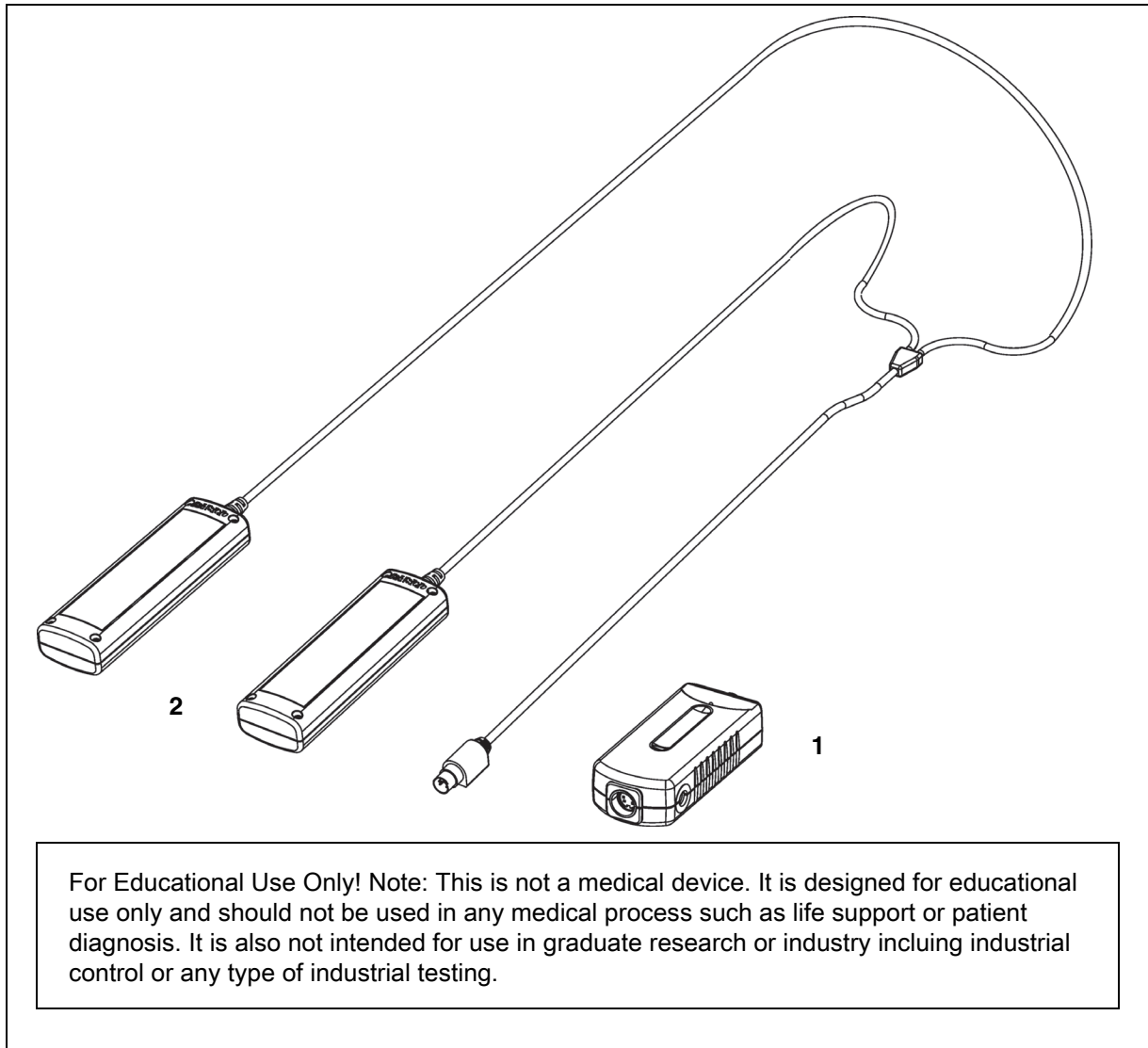


# PASPORT Hand-Grip Heart Rate Sensor

## PS-2186



**Included Equipment**

**Part Number**

1. Hand-Grip Heart Rate Sensor	PS-2186
2. Hand-Grip Assembly	Included

**Other Items Needed**

PASCO Interface	(See the PASCO Catalog for details)
PASCO Data Collection Software	(See the PASCO Catalog for details)

## Introduction

The PASCO Hand-Grip Heart Rate Sensor works with a PASCO interface to collect heart rate data once every five seconds. The sensor consists of the Heart Rate Sensor box and the Hand-Grip Assembly. A cable at the end of the Hand-Grips Assembly connects the Hand-Grips to the front end of the Heart Rate Sensor box.

The Hand-Grips cable extends 2 meters. The Hand-Grips cable is separated about 15 cm originally, but the cable can be separated if needed for about one meter by gently pulling the hand grips away from each other. A small 'button' at the midpoint of the Hand-Grips cable limits the split distance.

The Hand-Grip Heart Rate Sensor can be used to make measurements during mild exercise. For example, it can be used to determine the effects of mild exercise on heart rate. NOTE: the Hand-Grip Heart Rate Sensor is not a medical instrument. It cannot be used to gauge the health or fitness of a person.

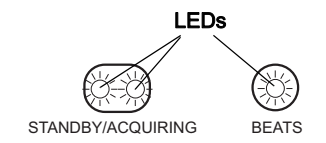
*NOTE: The split distance of the Hand-Grips cable does NOT need to be increased, but it can be increased for your convenience.*

## Range

The range of the Hand-Grip Heart Rate Sensor is from 40 to 240 beats per minute.

## Theory of Operation

Like an electrocardiograph (EKG) that monitors the electrical signal of the heart, the Hand-Grip Heart Rate Sensor measures electrical signals that start at the heart and reach the skin at the palms of the hands.



The sensor box has a yellow light emitting diode (LED) that indicates when the sensor is in STANDBY mode and a green LED that indicates when the sensor is ACQUIRING data.

The sensor box has a red LED that flashes to indicate when a heart beat (BEATS) has been detected.

## Maintenance of the Hand-Grips

The Hand-Grips for the Heart Rate Sensor should be wiped clean on a regular basis with a damp cloth or paper towel. Do not submerge the Hand-Grips in water.

## Setup

### Hardware Setup

*The following three steps can be performed in any order.*

1. Connect the mini-DIN plug of the Hand-Grip Assembly to the front end of the Heart Rate Sensor box.

*The mini-DIN plug on the Hand-Grip Assembly fits into the sensor box in only one way.*

2. Connect the Hand-Grip Heart Rate Sensor to a PASCO Interface.

3. Connect the PASCO interface to a computing device such as a computer, tablet or smart phone.

## Software Setup

Install the latest version of the PASCO Data Collection Software. Check the PASCO web site at [www.pasco.com](http://www.pasco.com) for information..

- Refer to the Online Help in the data collection software for more information about using the software. For further help, contact PASCO Technical Support.
1. Launch the software and setup a Graph display to show heart rate (beats per minute).
    - The yellow LED (STANDBY) on the sensor will light.
  2. Grip the Hand-Grip assembly with the palms of both hands.
    - The green LED (ACQUIRING) will light. In a few seconds, the red LED (BEATS) will begin to flash.
  3. Click Record or press Start to begin data collection.
    - Note that the best results are usually obtained with the sample rate left at the default of one sample per five seconds.
  4. Click or press Stop to end data collection.

*NOTE: Data collection will be easier with two people; one to grip the sensor and one to operate the interface or computer.*

## Measurement Technique

When you are using the Hand-Grip Heart Rate Sensor, grasp the hand grips firmly but not too tightly in the palms of the hands so that one of the metallic sides of each grip is in the center of the palm. Measurements will be easier and more accurate if the hands are clean and dry.

## Sampling

By default, the Hand-Grip Heart Rate Sensor continuously monitors the time between beats, calculates the beats per minute, and averages the beats per minute within a five second interval. The average is then displayed. This process tends to “smooth” the collected data.

## Specifications

<b>Sensor Range</b>	40 to 240 beats per minute
<b>Accuracy</b>	$\pm 1$ beat per minute
<b>Resolution</b>	1 beat per minute
<b>Maximum Sample Rate</b>	1 per two seconds
<b>Default Sample Rate</b>	1 per five seconds

## Technical Support

Contact Technical Support for information about possible replacement parts and for assistance with any PASCO product: Contact PASCO at:

Address: PASCO scientific  
10101 Foothills Blvd.  
Roseville, CA 95747-7100

Phone: 916-462-8384 (worldwide)  
800-772-8700 (U.S.)

Web: [www.pasco.com](http://www.pasco.com)

Email: [support@pasco.com](mailto:support@pasco.com)

For more information about the Hand-Grip Heart Rate Sensor and the latest revision of this manual, visit the PASCO web site: [www.pasco.com](http://www.pasco.com)

**Limited Warranty** For a description of the product warranty, see the PASCO catalog. **Copyright** The PASCO scientific 012-10538B *Hand-Grip Heart Rate Sensor Instruction Manual* is copyrighted with all rights reserved. Permission is granted to non-profit educational institutions for reproduction of any part of this manual, providing the reproductions are used only in their laboratories and classrooms, and are not sold for profit. Reproduction under any other circumstances, without the written consent of PASCO scientific, is prohibited. **Trademarks** PASCO and PASCO scientific are trademarks or registered trademarks of PASCO scientific, in the United States and/or in other countries. For more information visit [www.pasco.com/legal](http://www.pasco.com/legal).

### Product End of Life Disposal Instructions:

This electronic product is subject to disposal and recycling regulations that vary by country and region. It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment. To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle/disposal service, or the place where you purchased the product.

The European Union WEEE (Waste Electronic and Electrical Equipment) symbol (to the right) and on the product or its packaging indicates that this product **must not** be disposed of in a standard waste container.

